

REMARKS

Claims 1 to 16, as amended, appear in this application for the Examiner's review and consideration. The amendments are fully supported by the specification and claims as originally filed. In particular, support for the amendments of the claims to change the recitations of "mainly comprising" to "consisting essentially of" is found at page 6, lines 21 to 25, and page 8, lines 11 to 15, where the present specification clearly distinguishes the presently claimed method from the method disclosed in International Publication No. WO 89/02415, which incorporates chlorides. Therefore, there is no issue of new matter.

Claims 1 to 15 stand rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over International Publication No. WO 89/02415 to Mellström et al. (Mellström), for the reasons set forth on pages 2 to 5 of the Office Action; and

Claim 16 stands rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over Mellström in view of Hurley et al., THE EFFECTS OF ATMOSPHERE AND ADDITIVES ON COAL SLAG VISCOSITY, (Hurley), for the reasons set forth on page 5 of the Office Action.

In response, Applicants submit that the presently claimed invention is directed to a method for removing boron from silicon. The presently claimed method comprises heating metal silicon containing boron as an impurity to a temperature ranging from the melting point of silicon to 2200°C to place it in a molten state, then adding a solid consisting essentially of silicon dioxide and a solid consisting essentially of one or both of a carbonate of an alkali metal or a hydrate of a carbonate of an alkali metal into the molten silicon, so as to form a slag on the molten silicon, and remove the boron from the silicon.

Applicants note that it is well settled law that the phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps and those that do not materially affect the basic and novel characteristics of the claimed invention. One of ordinary skill in the art will clearly understand that the present specification, at page 6, lines 21 to 25, and page 8, lines 11 to 15, clearly teaches that the use of chloride compounds in the method disclosed by Mellström for removing boron from silicon would materially affect the basic and novel characteristics of the presently claimed method. Therefore, the recitation of the phrase "consisting essentially of" is clearly supported by the present specification, as originally filed.

With regard to Mellström, that reference, as cited in the Office Action, discloses slag forming components containing solid chlorine compounds. *See* Mellström, page 2, lines 8 to

15, and the Abstract. In contrast, the presently claimed method excludes materials and steps that materially affect the basic and novel characteristics of the claimed invention. As set forth in the specification, which specifically distinguishes the presently claimed method from the disclosure of Mellström, that includes the exclusion of the addition of slag forming components comprising solid chlorine compounds, as disclosed by Mellström.

In addition, the presently claimed method provides unexpected results when compared to Mellström. In particular, the examples provided in the present specification demonstrate that the presently claimed method provides a significantly more purified silicon than does the process disclosed by Mellström. For example, the boron, B, content of the silicon produced in Example 2 of the present specification is 0.06 ppm. In contrast, the lowest boron content for “purified” silicon disclosed in the examples of Mellström is 5 ppm.

Therefore, Mellström does not disclose or suggest the presently claimed method, and fails to provide any reason for one of ordinary skill in the art to make and/or use the presently claimed method.

Hurley does nothing to overcome the deficiencies of Mellström. Hurley is cited in the Office Action for the disclosure of the addition of alumina to a slag composition to increase the viscosity of the slag, making the slag less corrosive. However, even if the disclosure of Hurley was combined by one of ordinary skill in the art with the disclosure of Mellström, the resulting combination would not provide the presently claimed method. One of ordinary skill in the art combining the disclosures of Mellström and Hurley would obtain a method in which solid chlorine compounds were added as a slag forming component. That is not the presently claimed method, as the addition of solid chlorine compounds would materially affect the basic and novel characteristics of the presently claimed method. Thus, one of ordinary skill in the art, following the combined disclosures of Mellström and Hurley would have no reason to make or use the presently claimed method.

Therefore, as Mellström and Hurley, whether taken alone or in combination, provide no reason for one of ordinary skill in the art to make and/or use the presently claimed method, the present claims are not obvious over those references. Accordingly, it is respectfully requested that the Examiner withdraw the rejection of claims 1 to 15 under 35 U.S.C. § 103(a) over Mellström and the rejection of claim 16 under 35 U.S.C. § 103(a) over Mellström in view of Hurley.

Applicants thus submit that the entire application is now in condition for allowance, an early notice of which would be appreciated. Should the Examiner not agree with Applicants’ position, a personal or telephonic interview is respectfully requested to discuss

any remaining issues prior to the issuance of a further Office Action, and to expedite the allowance of the application.

No fee is believed to be due for the filing of this Amendment. Should any fees be due, however, please charge such fees to Deposit Account No. 11-0600.

Respectfully submitted,

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